protruded chamber 119 and gasket or o-ring 110 to form a hermetic seal with the protruded surface 119. A supply of a first flavor-containing materials 12a is placed directly on a separator or filter 15 and a supply of a first flavor-containing materials 12b is enclosed in filter 15a. In case that the materials 12a is milk granules or powder and materials 12b is coffee grounds for making milk-containing coffee drinks, the filter or separator 15 can have large openings to prevent the clogging of this filter by the gel or gel-like materials in the milk. It is found that the openings of the filter or separator 15 can be as large as about 3 mm without significantly impacting the brewing process or the quality of the beverage received in receptacle such as a cup or carafe 40. The barrier film helps to keep the milk granules or powder in the chamber 11a when the filter 15 has openings larger than the size of the milk granules or powder during the storage and handling of the cartridge 10.

Clearly, the modifications for the cartridges and mounting head can be combined into or removed from any of the exemplar embodiments of the invention. The scope of the invention is obviously not restricted to the embodiments described by way of examples and depicted in the drawings, there being numerous changes, modifications, additions, and applications thereof imaginable within the purview of the claims.

What is claimed is:

1. A cartridge for use with a mounting head for making fluid comestibles such as coffee, espresso, cappuccino, latte, tea, filtered water, hot chocolate, milk, soup or herb comprising:

a cartridge inlet for forming a hermetic seal with the mounting head and introducing liquid under pressure from the mounting head into said cartridge;

a chamber connected to said cartridge inlet for containing suitable flavor-containing or particle materials and for allowing the interaction of the flavor-containing or particle materials with the liquid from said cartridge inlet under pressure therein to produce the fluid comestibles;

a cartridge outlet connected to said chamber for discharging the fluid comestibles produced in said chamber; and

a handle allowing a user to hold said handle to attach and secure said cartridge inlet to the mounting head, said handle comprising at least part of the wall of said chamber, said at least part of the wall being sufficiently rigid and adapted for the user to hold without causing substantial deformation or damage.

2. A cartridge as defined in claim 1 wherein said cartridge inlet, said chamber and said cartridge outlet are formed as one single or integral body.

3. A cartridge as defined in claim 1 wherein said cartridge inlet has a cross-section area significantly smaller than said chamber to reduce the force exerted by the pressure in said chamber to said cartridge inlet, thereby lowering the risk of breaking said hermetic seal.

4. A cartridge as defined in claim 1 wherein said cartridge outlet comprises a restrictive opening such as an orifice for forming a high-speed fluid jet or stream, said restrictive opening being arranged to allow

the high-speed fluid stream or[illegible] interact with air when or before the flu[illegible]eceived in a receptacle such as a cup or carafe, thereby generating a foamy head or crema for the fluid comestible.

5. A cartridge as defined in claim 1 wherein said cartridge outlet comprises a restrictive opening such as an orifice for producing a fluid jet or stream of sufficiently high speed and an arrangement for the fluid jet or stream to inject into a receptacle such as a cup or carafe to produce a foamy head or crema therein.

6. A method for using the cartridge as defined in claim 1 to make fluid comestibles comprising a step of holding said handle of said cartridge to secure said cartridge inlet to the mounting head and a step of causing the liquid to be delivered under pressure through the flavor-containing or particle materials in said chamber and through said cartridge outlet and directly into a receptacle such as a cup or carafe for consumption, thereby dramatically simplifying the preparation of the fluid comestibles and relieving the user from the tedious cleaning work after preparing the fluid comestibles.

7. A method for using the cartridge as defined in claim 1 to make fluid comestibles as defined in claim 6 wherein the pressure used to deliver the liquid is from an in-house or in-building plumb system.

8. A method for using the cartridge as defined in claim 1 to make fluid comestibles as defined in claim 6 wherein the pressure used to deliver the liquid is generated by a pressurization means such as a pump, pressurized steam or compressed air.

9. A method for using the cartridge as defined in claim 1 to make fluid comestibles as defined in claim 6 wherein the mounting head is hand-held.

10. A method for using the cartridge as defined in claim 1 to make fluid comestibles as defined in claim 6 wherein the mounting head is fixed in position.

11. A cartridge as defined in claim 1 wherein said chamber adapts a generally spherical or cylindrical shape to improve the amount of pressure said cartridge can withstand.

12. A cartridge as defined in claim 1 further comprising a plurality of protrusions such as vertical ridges, ribs or spherical dots on the outer surface of said chamber to facilitate the connection and removal of said cartridge to and from the mounting head or to make the user feel cooler when holding said handle.

13. A cartridge as defined in claim 1 wherein said cartridge outlet is dimensioned to fit into the cartridge inlet, or vice versa, of another said cartridge, thereby allowing a plurality of cartridges to be connected to each other to facilitate the storage or packaging of the cartridges.

14. A cartridge as defined in claim 1 wherein said cartridge inlet comprises a first lock element for removably engaging with a second lock element on the mounting head to prevent said cartridge inlet from being separated from the mounting head by the liquid pressure in said chamber.

15. A cartridge as defined in claim 14 wherein said cartridge inlet further comprises a cylindrical opening dimensioned to receive a tubular extension on the mounting head to form water-tight seal between said cylindrical opening and the tubular extension when said first and second lock elements are engaged.

16. A cartridge as defined in claim 14 wherein said first lock element comprises a flange such as a circular flange having at least one cut or a non-circular flange for engaging with the second lock element which may comprise one or more protrusions such as spiral- or helix-shaped ledges or ridges on the inner surface of a substantially cylindrical chamber, said flange and protrusion being so configured that rotation of said cartridge inlet causes it to move into or out of the substantially cylindrical chamber.

17. A cartridge as defined in claim 16 wherein said cartridge inlet or flange comprises a safety element adapted to engage with a counterpart on the mounting head for preventing the removal of said cartridge from the mounting head when the pressure in said chamber is high.

18. A cartridge as defined in claim 1 further comprising a filter for the flavor-containing or particle materials in said chamber and a barrier film breakable by the fluid coming from said filter for impeding the transport of molecules such as aroma, moisture or oxygen between said chamber and atmosphere.

19. A cartridge as defined in claim 1 wherein said cartridge inlet, chamber, cartridge outlet and said filter are made from the same material such as polyester, polypropylene or nylon to facilitate the recycle or reuse thereby reducing the burden to environment.

20. A cartridge as defined in claim 1 wherein at least said chamber is made from degradable materials such as poly(lactic acid) thereby reducing the burden to environment.

21. A cartridge as defined in claim 1 further comprising an amount of flavor-containing or particle materials sealed in a water-permeable filter bag or pouch in said chamber.

22. A cartridge as defined in claim 1 further comprising a filter for the flavor-containing or particle materials and a plurality of protrusions or grooves on the inner wall of said chamber to lead the fluid comestibles from said filter to said cartridge outlet.

23. A cartridge as defined in claim 1 further comprising barrier film for sealing said cartridge outlet, said barrier film being adapted to be removable by a user or breakable by the fluid comestibles.

24. A cartridge as defined in claim 1 further comprising a barrier film for sealing said cartridge inlet, said barrier film being adapted to be removable by a user or breakable by force.

25. A cartridge as defined in claim 1 wherein said cartridge inlet comprises a substantially cylindrical opening having a narrower section near its lower part for facilitating the attachment of a barrier film, which is adapted to be breakable by force or the liquid, to the wall of said cylindrical opening around said narrower section to cover said cartridge inlet.

26. A cartridge as defined in claim 1 further comprising a removable cap or plug for said cartridge inlet.

27. A cartridge as defined in claim 1 further comprising a valve located in said cartridge inlet for preventing or impeding the liquid or flavor-containing materials in said chamber from gushing out of said

cartridge inlet in case that the user removes the cartridge from the mounting head when the pressure in the cartridge is high.

28. A cartridge as defined in claim 1 further comprising a piece of porous material such as bonded or unbonded fibers, foam or cloth for restricting the flavor-containing or particle materials from moving out of said chamber.

29. A cartridge as defined in claim 1 further comprising a valve in said cartridge inlet or cartridge outlet to stop the dripping of the residual fluid in the cartridge during the removal of the cartridge, said valve comprising an opening that is closed or sufficiently small when the cartridge is removed from the mounting head or when the pressure upstream is sufficiently small.

30. A cartridge as defined in claim 1 further comprising a elastomer septum secured in said cartridge inlet, said elastomer septum being adapted to allow a needle having a fluid channel to penetrate and deliver the liquid under pressure to the flavor-containing materials in said chamber.

31. A cartridge as defined in claim 1 wherein said cartridge further comprising a predetermined amount of roasted ground coffee.

32. A cartridge as defined in claim 31 further comprising a predetermined amount of reactive materials such as lime or calcium oxide for prolonging the freshness of said ground coffee and a porous hydrophobic film for preventing said ground coffee and the liquid from contacting said reactive materials.

33. A cartridge as defined in claim 1 wherein said cartridge inlet, chamber and cartridge outlet are blow-molded as one single body.

34. A cartridge for making fluid comestible such as coffee, espresso, cappuccino, latte, tea, hot chocolate, milk, soup or herb comprising:

a cartridge inlet for the introduction of pressurized liquid into said cartridge;

a first flavor-containing materials;

a filter permeable to the liquid for preventing said first flavor-containing materials from passing through;

a second flavor-containing materials separated from said first flavor-containing materials by at least said filter, thereby preventing intermixing and potential interactions between said first and second flavor-containing materials;

a chamber for containing said first and second flavor-containing materials and for allowing the interaction of the pressurized liquid with said first and second flavor-containing materials therein;

a cartridge outlet for discharging the fluid comestible produced from said first and second flavor-containing materials; and

a separator located in or above said cartridge outlet but below said first and second flavor-containing materials in said chamber, said separator having numerous small openings to allow said fluid comestibles to pass through.

35. A cartridge as defined in claim 34 wherein said second flavor-containing materials is water-soluble materials such as granular milk, cocoa, cream or sugar and said first flavor-containing material is coffee grounds, tea leaves or herb materials.

36. A cartridge as defined in claim 35 wherein said first flavor-containing materials is substantially enclosed by said filter and said second flavor-containing material is contained in the space between said first flavor-containing materials and said separator.

37. A cartridge as defined in claim 34 further comprising a first barrier film for sealing said cartridge inlet and a second barrier film below said separator for sealing said cartridge outlet, said first and second barrier films being adapted to be breakable by fluid pressure or removable by a user.

38. A cartridge as defined in claim 34 further comprising a second filter for said second flavor-containing materials in said chamber.

39. A cartridge as defined in claim 38 wherein said first flavor-containing materials is enclosed by said filter and said second flavor-containing material is enclosed by said second filter.

40. A cartridge as defined in claim 34 wherein said cartridge outlet comprises a restrictive opening such as an orifice adapted to produce a fluid jet or stream at sufficiently high-speed so that a foamy head or crema is generated when the fluid jet or stream is received in a receptacle such as a cup or carafe.

41. A method for the preparation of fluid comestibles from a cartridge comprising a cartridge inlet, a cartridge outlet, a handle and one or more flavor-containing or particle materials such as coffee grounds, tea, chocolate, cocoa, filtration materials, soup powder or granular milk in a chamber, which method comprising:

aligning said cartridge inlet with a mounting head in communication with a pressurized water source with the aid of said handle;

forming a watertight seal between said cartridge inlet and said mounting head with the aid of said handle;

locking said cartridge inlet to said mounting head to maintain said water-tight seal with the aid of said handle; and

introducing the pressurized water from said mounting head into said chamber wherein the pressurized water interacts with said flavor-containing materials or particle materials, thereby forming the fluid comestibles.

42. A method as defined in claim 41 wherein said aligning step comprises causing an extension tube, which has a lower part visible to the user and readily receivable in said cartridge inlet, on said mounting head to enter said cartridge inlet, thereby guiding said cartridge inlet into said mounting head.

43. A method as defined in claim 41 wherein said forming and locking steps comprise holding said handle to rotate said cartridge inlet relative to said mounting head until such rotation becomes tight enough.

44. A method as defined in claim 41 wherein said forming and locking steps comprise causing a needle having a fluid channel secured to said mounting head to penetrate a elastomer septum secured to said cartridge inlet.

45. A method as defined in claim 41 wherein said locking step comprises pushing a latch or pin by a spring or other mechanism in the mounting head toward said cartridge inlet to engage with a fixture such as a notch or flange on said cartridge inlet.

46. A method as defined in claim 41 further comprising discharging the fluid comestibles from said cartridge outlet directly into a receptacle such as a cup or carafe without contacting any other items, thereby relieving the user from tedious cleaning work after preparing the fluid comestibles.

47. A cartridge for making fluid comestibles such as coffee, espresso, cappuccino, latte, tea, hot chocolate or milk comprising:

a cartridge inlet for the introduction of pressurized liquid into said cartridge;

a chamber for containing one or more flavor-containing materials such as coffee grounds, tea, cocoa, chocolate or granular milk for the fluid comestibles and for allowing the interaction of the pressurized liquid with said flavor-containing materials therein;

a collector for collecting the fluid comestibles produced from the flavor-containing materials;

a restrictive opening such as an orifice for converting the fluid comestibles in said collector into a high-speed fluid stream or jet;

a filter located upstream of restrictive opening for protecting said restrictive opening from being clogged by the flavor-containing materials or foreign solid or gel materials; and

an arrangement for the high-speed fluid stream or jet to interact with air when or before the fluid comestibles is received in a receptacle such as a cup or carafe, thereby generating foamy head or crema for the fluid comestibles.

48. A cartridge as defined in claim 47 further comprising at least one additional restrictive opening, said restrictive openings being so constructed that the resulting high-speed fluid streams or jets meet or collide in the space, thereby generating foamy head or crema for the fluid comestibles.

49. A cartridge as defined in claim 47 wherein said arrangement allows the high-speed fluid stream or jet from said restrictive opening to collide or interact with a solid surface such as the inner wall of said cartridge outlet, thereby producing foamy head or crema for the fluid comestible.

50. A cartridge as defined in claim 47 further comprising a outlet chamber below said restrictive opening for receiving the high-speed fluid stream or jet and causing the mixing of air with fluid in said

chamber, thereby producing fine air bubbles, said outlet chamber having at least one opening for discharging the fluid and fine air bubbles.

51. A cartridge as defined in claim 47 wherein said arrangement allows the high-speed fluid stream or jet from said orifice or restricted opening to inject directly into the receptacle such as a cup or carafe, the high-speed fluid stream or jet carrying the surrounding air into the fluid comestibles in the receptacle such as a cup or carafe thereby generating foamy head or crema for the fluid comestibles.

52. A cartridge as defined in claim 47 wherein said restrictive opening is normally very small or closed and is adapted to increase in size when the pressure above increases.

53. A coffee cartridge or package for the preparation of fluid comestibles such as coffee, espresso, cappuccino, mocha or latte comprising:

a sealed chamber or compartment formed from substantially air- and water- impermeable materials for containing an amount of roasted coffee beans or grounds;

a freshness promoter located in said sealed compartment for prolonging the freshness of the roasted coffee beans or grounds therein, said freshness promoter comprising a supply of reactive materials that can react with the carbon dioxide released by the roasted coffee beans or grounds in said sealed compartment, thereby preventing over pressurization of said package as a result of the release of carbon dioxide, and react with water vapor in said sealed compartment, thereby impeding the deterioration of the roasted coffee beans or grounds; and

a separator for preventing said freshness promoter from contacting or contaminating the roasted coffee beans or grounds, said separator being permeable to carbon dioxide and water vapor to allow them to pass through readily and react with said freshness promoter.

54. A package as defined in claim 53 wherein said supply of reactive materials comprises lime or calcium oxide or other oxide of alkali metals and alkaline earth metals.

55. A package as defined in claim 53 wherein said separator is formed from a porous film, preferably a hydrophobic porous film.

56. A package as defined in claim 53 further comprising a supply of roasted coffee grounds, an inlet for introducing pressurized aqueous media into said sealed compartment to interact with said roasted coffee grounds to form fluid comestibles, and an outlet for the fluid comestibles.

57. A package as defined in claim 53 further comprising a supply of roasted coffee beans, said coffee beans being sealed in said compartment shortly after roasting to preserve the aroma of the freshly roasted beans.

58. A cartridge connector for use in preparing fluid comestibles from a cartridge comprising one or more flavor-containing or particle materials such as coffee grounds, tea, chocolate, cocoa, granular milk, herb, filtration materials or soup powder in a chamber and a cartridge inlet having a substantially cylindrical

body, a through-opening in the substantially cylindrical body connected to the chamber and a lock element, which comprising:

a substantially cylindrical chamber for receiving the substantially cylindrical body of the cartridge inlet;

a channel for providing communication between a source of pressurized liquid and the through-opening in the substantially cylindrical body after the substantially cylindrical body is received in said substantially cylindrical chamber;

a second lock element for removably engaging with the lock element on the cartridge inlet to prevent the substantially cylindrical body of the cartridge inlet from being pushed out of said substantially cylindrical chamber by the pressure of the pressurized liquid, whereby, in use, the substantially cylindrical body of the cartridge inlet is received in said substantially cylindrical chamber to form a hermetic seal, which is maintained by said second lock element and the lock element on the cartridge inlet, and the pressurized liquid is delivered through said channel and the through-opening to the flavor-containing or particle materials in the cartridge wherein the pressurized liquid and materials interacts to form the fluid comestibles.

59. A cartridge connector as defined in claim 58 further comprising a valve for controlling the liquid flow in said channel, said valve being adapted to open said channel when the substantially cylindrical body of the cartridge inlet is received in said substantially cylindrical chamber and to close said channel when the substantially cylindrical body is removed from said substantially cylindrical chamber.

60. A cartridge connector as defined in claim 58 further comprising a tubular extension connected to said channel, said tubular extension being adapted to fit into the through-opening of the cartridge inlet to form the hermetic seal when the lock element of the cartridge inlet is engaged with said second lock element.

61. A cartridge connector as defined in claim 58 further comprising a cylindrical member extended substantially out of said substantially cylindrical chamber to function as guide for the user to insert substantially cylindrical body of the cartridge inlet into said substantially cylindrical chamber.

62. A cartridge connector as defined in claim 58 wherein said second lock element comprises a raised section such as a spiral- or helix-shaped ledge or ridge on the inner surface of said substantially cylindrical chamber adapted to engage with the lock element of the cartridge inlet such as a non-circular flange or a circular flange having at least one cut so that the rotation of the cartridge inlet in said substantially cylindrical chamber causes said cartridge inlet to move into or out of said cylindrical chamber.

63. A cartridge connector as defined in claim 58 further comprising a safety element for impeding or preventing the removal of the cartridge from said cartridge connector when the pressure in said cartridge is high.

64. A cartridge connector as defined in claim 58 wherein said second lock element comprises a thread on the inner surface of said substantially cylindrical body for engaging the lock element, i.e. a thread on the outer surface of the substantially cylindrical body.

65. A cartridge connector as defined in claim 58 wherein said second lock element comprises a lock chamber in the wall of said substantially cylindrical chamber, a latch or pin receivable in said lock chamber for engaging with the first lock element comprising a flange for the substantially cylindrical body, and a spring for activating said latch or pin to engage with the flange.

66. A cartridge for use with a holder having an open upper end and a large opening at its bottom in an apparatus such as an espresso machine or coffee maker to make beverage or drink such as coffee, espresso, cappuccino, latte, tea, filtered water, hot chocolate, milk, soup or herb, which comprising:

a chamber adapted to be received in the holder, said chamber having a generally open upper end and a generally closed lower end ;

a flange formed at said generally open upper end of said chamber, said flange being adapted to be supported by the holder to form a seal with the brew head of the apparatus;

a filter sealed at its peripheral to said flange and conformed partially to said chamber to form a cavity above said filter and a fluid collection space between said filter and said generally closed lower end of said chamber

suitable flavor-containing or particle materials such as coffee grounds, tea, chocolate, cocoa, solid milk, herb or filtration materials in said cavity formed by said filter;

a cover sealed to said flange for maintaining said flavor-containing or particle materials in said cavity; and

a cartridge outlet formed at said generally closed lower end of said chamber for discharging the drink, said cartridge outlet being adapted to fit in or directly above the large opening at the bottom of the holder so that the beverage is discharged directly into a receptacle such as a cup or carafe without contacting or contaminating the holder, thereby relieving the user from the tedious work of cleaning the apparatus after preparing beverages.

67. A cartridge connector as defined in claim 66 further comprising a barrier film for sealing the cartridge outlet and preventing the loss of aroma or freshness of the flavor-containing materials, said barrier film being breakable by liquid pressure.

68. A beverage cartridge for use with a mounting head comprising:

a flavor-containing or particle materials such as coffee grounds, tea, chocolate, cocoa, solid milk, herb or filtration materials;

a chamber for containing said flavor-containing or particle materials;

a cartridge outlet for the beverage; and

a cartridge inlet having an opening and a elastomer septum secured to or in said opening to seal said cartridge inlet, said elastomer septum being adapted to be penetrated by a rigid, elongated thin member such as a needle on the mounting head for introducing pressurized liquid from the mounting head to said flavor-containing or particle materials in said chamber wherein the pressurized liquid interacts with said flavor-containing or particle materials to produce the drink and to apply sufficient force to said rigid elongated thin member such as a needle to prevent said thin member such as a needle from being pushed out by the pressure in said chamber.

69. A cartridge connector as defined in claim 68 wherein said septum comprises a normally closed opening for facilitating the penetration of the thin member such as a needle through said septum.

70. A beverage cartridge for use with a mounting head comprising:

suitable flavor-containing or particle materials such as coffee grounds, tea, chocolate, cocoa, solid milk, herb or filtration materials;

a rigid chamber for a user to hold to mount the cartridge to the mounting head without substantially deforming said rigid chamber and for containing said flavor-containing or particle materials;

a cartridge outlet for the beverage; and

a cartridge inlet for the introduction of pressurized liquid from the mounting head to said flavor-containing or particle materials in said rigid chamber wherein the pressurized liquid interacts with said flavor-containing or particle materials to produce the drink, said cartridge inlet is adapted to have a cross-section area significantly smaller than said chamber to reduce the force exerted by the pressurized liquid to said cartridge inlet, thereby lowering the risk of personal injury caused by the dislodging of said cartridge from the mounting head.

71. A cartridge for use with a mounting head to make beverage such as coffee, espresso, cappuccino, latte, tea, filtered water, hot chocolate, milk, soup or herb comprising:

suitable flavor-containing or particle materials such as coffee grounds, tea, granular milk, filtration materials, coca, soup powder or herb for the production of the beverage;

a filter for said flavor-containing or particle materials;

a lower body comprising an lower chamber having a generally closed end and a generally open end, a first flange formed at said generally open end, and a cartridge outlet formed at the generally closed end for discharging the beverage; and

an upper body comprising an upper chamber having a generally closed end and a generally open end, a second flange formed at said generally open end, and a cartridge inlet formed at the generally closed end, said cartridge inlet having a sealing surface for forming a hermetic seal with the mounting head and a liquid opening located near the center part of said sealing surface for introducing the pressurized liquid from the mounting head into said upper chamber, said upper and lower bodies being sealed together at said first and

second flanges to form a chamber to contain said flavor-containing or particle materials, said liquid opening having a sufficiently small size to lower the force exerted by the pressurized liquid to the hermetic seal thereby improving the hermetic seal, whereby, in use, said sealing surface of said cartridge inlet is brought against the mounting head to form the hermetic seal around said small liquid opening thereby allowing the pressurized liquid to be introduced into said chamber wherein it interacts with the flavor-containing or particle materials to form the beverage.

72. A cartridge as defined in claim 67 wherein said first chamber and said second chamber are formed from sheet material such as polyester, polypropylene or aluminum sheet by mechanical forming, thermoforming or a combination of mechanical forming and thermoforming.

73. A cartridge as defined in claim 67 further comprising a second flavor-containing materials and a second filter for said second materials, at least one said first and second flavor-containing materials being a water-soluble materials, the filter for said water-soluble materials comprising larger openings than the other filter.

74. A cartridge as defined in claim 67 wherein the peripheral of said filter is adapted to be heat-sealed to said upper or lower body.

75. A cartridge as defined in claim 67 wherein said cartridge inlet is recessed into said upper chamber to form a miniature chamber for receiving the mounting head and to form said sealing surface.

76. A cartridge as defined in claim 67 wherein said cartridge inlet is protruded above said upper chamber to form a miniature chamber receivable in the mounting head and to form said sealing surface.

77. A cartridge as defined in claim 67 wherein said cartridge outlet comprises an orifice, said orifice being adapted to form a fluid jet or stream at sufficiently high-speed that a foam head or crema is generated when the fluid jet or stream is received in a receptacle such as a cup or carafe.